

# The Chemical Age

A Weekly Journal Devoted to Industrial and Engineering Chemistry

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## The War Work of Scientists

THE debate in the House of Lords last week on the organisation of scientific men for the war effort underlined some of the doubts expressed in our leading article of March 29 and crystallised the dissatisfaction felt by many men of scientific training in regard to the Government's handling of the scientific forces of the country. The criticisms that are heard on all sides were recounted in an opening speech by Viscount Samuel, and there is a good deal to be learnt both from this speech and from the reply which it provoked. It is inevitable that mistakes should have been made and that curious, not to say amusing, situations should thereby have arisen. Among the greatest of the absurdities has been the Central Register. Speakers at the recent luncheon of the Institute of Chemical Engineers had no good word to say for this monument of inefficiency. It was compiled with very great care by all the technical and scientific institutions of the country, yet the absurdity recorded of how, as a result of being on the register, the President of the Institution of Mechanical Engineers was offered a junior post at £150 a year is only one of many such instances which have come to our notice. The higher posts have been filled by some method of personal selection not based on the proved capacities of the individuals.

From Lord Hankey's reply to the debate it is evident that a vast number of Committees and Controls and Councils have been set up, based for the most part on academic bodies like the Royal Society, and that there has been instituted an elaborate system of liaison and consultation. The result inevitably leads to the conclusion that there is too much harness and too little horse. We should indeed be left with the impression that the harness had completely submerged the horse were it not that it is evident that somewhere, beneath the mass of high-sounding Committees, Controls and Councils, a lot of good work is being done by someone. Our anxiety is that still better use should be made of the material available.

Viscount Samuel pointed out that six months ago and in a somewhat lesser degree to-day, there is a widespread feeling, particularly among the "younger men of science in the country," that useful services were being ignored. This feeling is not confined to younger scientists. There are many of the older scientific men, particularly consultants and those engaged in industry, who feel that they have been cold-shouldered by reason of that curious insistence of the Government upon placing the responsibility in the hands of academic men who all too frequently have no experience outside their laboratories, text books, and

lecture rooms. War is not pure science; it is applied science. Viscount Samuel rightly made the point that "industrial men of science ought to be more frequently employed—chemists and physicists who are actually engaged in industry or in practice as consultants. There are many men of great merit and ability," he said, "who if they do not hold some conspicuous position are liable to be overlooked, and have in fact been overlooked."

To this criticism Lord Hankey was able to point to a good deal that has been achieved, in fact to the work that has been done in spite of, and somewhere beneath, the mass of harness. This success may have been achieved because, as Lord Hankey said in reference to Archimedes, "the genius of one man is more effective than any number whatsoever." He was able to show that an improvement in the utilisation of science in the war effort followed upon the establishment of the Scientific Advisory Council six months ago, a council of which Lord Hankey is himself the chairman. He defended the reliance that has been placed upon the Royal Society and other academic men of science, and he made a very curious and wholly unconvincing excuse for the exclusion of all representatives of applied science from the organisation. "The reason for their non-inclusion," he said, "was not in any way a failure to appreciate the great importance of applied science in our war effort, but simply that the proposal did not fit into the scheme of the Scientific Advisory Committee as the Government conceived it." We have seldom heard a more extraordinary reason for excluding a body of men who could have been of the utmost value. No doubt it was preferred to "utilise" their services by employing such men as the President of the Institution of Mechanical Engineers at £150 a year. It seems that the Government has realised the shortsightedness of its policy, because Lord Hankey went on to state that they were "at the present moment in touch with the professional societies concerned with the view of the possible establishment of a separate organisation working in the field of applied science, and in close touch with the Scientific Advisory Committee."

The conclusion that must be drawn is that even within the narrow limits of the scheme laid down by the Scientific Advisory Council a great deal of useful work has been done. What has been done, in fact, reflects much credit to all concerned. But so to neglect applied science as upon Lord Hankey's own admission it has been neglected betrays a distressing failure to recognise that war is a branch of applied science.

## NOTES AND COMMENTS

### Compulsory Saving

**T**HE Budget introduced on Monday is the most terrific taxing instrument ever imposed upon the people of Great Britain: the standard rate of income tax goes up to 10s. in the £. As reductions in allowances and exemptions make over two million more people liable to income tax, it would appear as if the limit in direct taxation has been reached, for anything more would amount to confiscation. Sir Kingsley Wood has gilded his pill with a highly ingenious form of compulsory saving. The reduced allowances will be credited to the taxpayer after the war in the Post Office Savings Bank, but as the maximum concession has been fixed at £65, incomes of more than £1500 will not benefit progressively. What is of more interest to the business community is the application of this new principle of after-war tax credits to the Excess Profits Tax. The 100 per cent. rate is maintained, but 20 per cent. of the net amount is to be refunded after the war for essential reconstruction and readjustment. Whether this is a better method than the immediate reduction of the tax to 85 or 90 per cent., as advocated in responsible quarters, is an open question which will be threshed out in the House of Commons. At the first glance it seems to answer the same purpose, and at the same time to fit in with Sir Kingsley Wood's avowed purpose of presenting a Budget chiefly aimed at defeating the menace of inflation. Still, it is to be greatly feared that even under the new device a great deal of injustice will be felt in the incidence of the tax between different companies, with the unfortunate result of making many of them less capable of a supreme war effort than they should be.

### Control the Super-Spenders !

**T**HE nation is so palpably prepared to go to all lengths in financing a just war that it will not shrink for a moment from the severity of the new taxation. The only criticism will be on points of detail, for the essential soundness of the present generation's paying for the war up to the hilt will not be disputed in any responsible quarter. The one doubt in thoughtful men's minds is how far it is desirable to deprive the individual of virtually all power of spending, for he is almost reduced to the position of being no more than a taxpayer and a saver. What the Budget means is that the Government virtually takes upon itself the entire power of spending, and those who know the ways of the bureaucracy realise only too well that the individual spends his money far more wisely and economically than any Government Department. There never was such an urgent need as now for a tight hold on Government expenditure as a check upon the appalling waste which is being revealed in one direction after another. It is absurd to regard mammoth figures as either the guarantees of efficiency or the harbingers of victory. Before the House of Commons gives Sir Kingsley Wood powers of raising money never before sought by a British Chancellor of the Exchequer, there should be a full-dress debate on national economy vigorously pressed home until some machinery is devised for the effective control of the super-spenders of Whitehall.

### Apprentices to Chemistry

**T**WO points emerged from the debate in the Lords referred to in our leading article which, apart from any immediate application to our war effort, will have their repercussions after the war. There is little doubt that a very large number of young men are now being employed in scientific work in many branches of the war effort. One has only to instance agriculture, the needs of the fighting services, medicine, and the numberless war-purpose manufacturers to recognise that, in addition to the men normally employed in industry, there has been a still greater call for scientific workers. Many of these, recruited from industrial firms, will have left the firms short-handed with the result

that these firms have engaged juniors instructed in a certain amount of routine work, many of whom will by their own efforts be enlarging their knowledge of chemistry. The same thing happened in the last war, so that we have growing up among us a number of young people mostly too young to be in the fighting services, many of them women, and some who are unfit for the fighting services, but all having this in common, that they are apprentices in chemistry. A great many of these will wish to continue in chemistry after the war, even though they can never aspire much beyond the lower grades of the craft, let alone aim at a degree. The value of a degree may be over-rated, but at least it is now the ticket of admission to the higher posts in chemistry. In addition to these there are those who have already gone a certain distance in scientific work who are being retained in civil life and trained intensively to provide yet more of the workers for the routine research operations needful at a time of mass effort.

### Scientific Workers after the War

**L**ORD HANKEY declared that "every item is being pursued systematically and unremittingly all over the country by, in the aggregate, a veritable army of scientists. At our universities hundreds of young men are being trained in scientific subjects, and according to their aptitudes they will be allotted to research or to the Defence Services or to industry. I have not got complete figures, but in one branch alone with which I have been associated I know that 700 young men are being trained at the universities in that way. At technical institutions and colleges all over the country, again by arrangement with the Government, thousands of young men, many of them actually in uniform, are being given a background of scientific education to fit them for the requirements of the modern Fighting Forces. In addition to that, thousands of men are being trained at the Services establishments." The question may well be asked, What is going to happen to all these men after the war? If many of them go into other occupations, as they normally would, the country will have achieved a positive gain. It is all to the good that all walks of life should be permeated by men with a realisation of what science means, of what scientific effort entails, and of what can be achieved by the aid of science. If, however, these men attempt to earn their living in science, the position will be very serious indeed.

### Employment Problems of the Future

**W**E are heading rapidly for that condition which was so manifest in Germany, where thousands of men holding the Ph.D. degree hung upon the tree of unemployment in bunches and festoons to be gathered in at two-a-penny by anyone who would employ them. Our professional and technical institutions should direct their policy so as to avoid tempting more entrants into their professions than there will be room for. The war will certainly see a wide expansion in chemical industry. More industries will make use of scientifically trained men, and the chemical industry itself will undertake more research work and will further extend the scope of its manufactures as suggested by the President of the Institution of Chemical Engineers in his annual address. To some extent, therefore, these men will be absorbed, but an important residue will remain of the large number of men now undergoing scientific training. In reconstruction after the war there may be employment for the young recently-trained men in subsidiary positions. But reconstruction is a task demanding experience, and a very wide knowledge both of the industries concerned and of the problems upon which decisions must be taken. We cannot know to what extent science may be used in planning reconstruction, but we hope that scientific advice will not be neglected, and the business left entirely to the politicians.

# THE INSTITUTION OF CHEMICAL ENGINEERS

## Annual Meeting and Luncheon

THE nineteenth annual corporate meeting of the Institution of Chemical Engineers was held at the Connaught Rooms, Great Queen Street, London, W.C.2, on April 4. The President, MR. F. HERON ROGERS, was in the chair. The following officers and members of Council were elected for the coming year:—President, MR. C. S. GARLAND; vice-presidents, MR. H. W. CREMER, DR. J. H. DOBSON, MR. J. MCKILLOP, and DR. A. PARKER; joint hon. secretaries, DR. A. J. V. UNDERWOOD and MR. M. B. DONALD; hon. treasurer, MR. F. A. GREENE; members of Council, MR. J. A. ORIEL, MR. W. RUSSELL, and MR. S. J. TUNGAY; associate member of Council, PROFESSOR D. M. NEWITT.

The presentation of the Osborne Reynolds, Moulton, and Junior Moulton medals followed. The Osborne Reynolds medal, for meritorious services to the Institution, was awarded to MR. M. B. DONALD, whose valuable and untiring services as joint honorary secretary have extended over many years. MR. J. C. FARRANT, M.I.Chem.E., was awarded the Moulton medal for his paper "A Review of Certain Unit Processes in the Reduction of Materials." The Junior Moulton medal and prize of books were presented to MR. S. A. GREGORY (graduate)

Mr. F. Heron Rogers, retiring President of the Institution of Chemical Engineers



for his paper on "Plant Design in Microbiological Processes." The William Macnab medal for the best set of papers submitted in the Associate-Membership examination for 1940 was awarded to MR. J. V. S. GLASS. After the meeting Mr. Heron Rogers delivered his presidential address, extracts from which are given below.

### "SOME POST-WAR PROBLEMS" Mr. Heron Rogers's Presidential Address

**W**E are at war. This time it is a new form of war, not waged between armies of men trained to fight, but a war where race extermination *in toto* is practised; and this is the declared dogma of our enemies' creed. Men, women, children, their homes, and their all, along with the cherished relics of civilisation's growth are to be destroyed in the theory that terror must first prevail, and ultimately lead to the subjugation and enslavement of one race to the supposed benefit of another. Against such who are our enemies to-day we must be prepared to meet in the arena of endeavour and wits to-morrow. That will be our next battlefield. Forewarned, we must gird ourselves to retain our industries by devising and making better goods, extend our trade abroad, and yet help those who directly or indirectly have fallen by the wayside by enemy action, and at the same time so reconstruct our activities that the efforts of the enemy are nullified.

After the present war most firms will emerge financially the worse for wear. Plant has been employed for every hour, and depreciation for wear and tear far overrun the Schedule D allowance. Our financial control has ordained a 100 per cent. Excess Profits Tax over and above the pre-war period—excellent as an example of patriotism, but quite futile in its ultimate effect. Not only has it robbed industry of incentive, but it has a secondary repercussion by preventing even a reasonable allowance being made for obsolescence, or replacement by new plant to keep in line with the times. It has killed initiative, for the manufacturer must in all things take a risk; if he wins he gains nothing, and his prospect therefore is a loss. Psychologically the effect of this Act has been to sterilise the efforts of that countless community of small firms whose feelings are entirely patriotic, but who cannot face the risk of failure or financial misadventure.

Chemical plant, as we all know, is more susceptible to wear, tear and obsolescence than any other type of plant used in industry. It is normally subjected to corrosion, is generally used every hour of the year, and may, from the all too rapid development of laboratory attempts to keep abreast of the times, become obsolete. In any case a three- or four-year interval of time is a huge gap to cover in progress of plant development, especially when development under the spear-

point drive of war brings new processes to light, and many new deviations in design. Hence after the war there will be, as indeed the last war showed, a huge demand for plant at home, and certainly abroad. The first question that will arise is that of finance. Finance will and must be a prime consideration, together with the maintenance of British industry and trade against unfair or enslaved employment abroad.

In this country, to its great detriment in the past, politics and political shibboleths have over-ridden and, in a great many cases, destroyed or degraded our native or adopted industries, without any reparation whatsoever. I have vivid memories of a flourishing chemical industry manufacturing tartaric and allied vegetable acids and employing 200 persons being closed, owing to the decree that it was not manufacturing a "fine chemical." For such sin, this factory, after many years' existence, suffered extinction to a subsidised foreign competition, the price for the foreign manufactured articles under subsidy being less than the cost of the raw material to the home factory. The maintenance of our industries and the employment of all must be a prime national aim. We have sent most of our money abroad. By the time the war is over we shall have borrowed in addition, and our main asset in the national balance sheet will be "goodwill," which means capacity to trade in goods that will command respect and be improvements on existing goods.

Taxation will be with us for generations to come and must be paid. Equally, if taxation be added to or reflected in the cost of production there are limits to what the other fellow will pay. If a man be honourably bankrupt with a fine goodwill, he settles his capital debt and starts again. Normally his creditors are the first to accept his wisdom. It may be in our case that such a course will be necessary, and a large proportion of our national debt expunged by an agreed *pro rata* capital levy.

The present war has illuminated the vulnerability of any industry geographically congested and isolated in its occurrence. Dispersion means ultimate safety, and ground-floor grouping is better than storied factories. Equally it is evident that 100 feet under mother earth is safe storage, and we can easily burrow to preserve our war-time stores, or sink reser-

voirs for fuel, explosives, or gas or water supply. These national stores could be hewn by labour that is adequately paid in substitution of any dole. The design, aeration, warming, draining and fitting of such subterranean depots would undoubtedly fall upon the shoulders of many of our profession for adequate solution. I cannot find anywhere or anyhow a real alternative to cave safety. There must be added security to and alternative dispersion of our vital services of electric supply, water, gas and sewerage, with many more valves and distribution points. Adequacy of unpurified fire-fighting water as distinct from using portable supplies is again indicated, and the provision of non-inflammable roof coverings would seem part of post-war equipment. Further, if large grouping of units of chemical manufacture entails economic saving, such units should be arranged to be capable of immediate or automatic isolation in the event of one or more of the group being destroyed.

We have but to peruse our list of imports to gain a very true insight into our deficiencies, and our post-war period cannot be better occupied than in making this country less dependent upon other countries for its necessities. I cannot see much room for importation of anything whatever that we can make or grow in these happy Isles, or the importation of anything but the bare raw materials upon which some of our indigenous industries depend, such as cotton, rubber, jute, copper, wood, wool, tropical products, oil, paper materials, and the like. There is no reason why we need import dextrine—or alcohols, or breakfast foods, or hundreds of like products.

### The Use of Native Products

In my last address I laboured the point of oil development. I now stress it again. We cannot in the future either afford or expect to survive financially or otherwise if we continue to buy all our oil outside the Empire. It must come mainly from our own resources by synthetic processes. A truly enormous field of development lies ahead and one has refreshing glimpses that this dire necessity of national self-sufficiency is now officially recognised. It has cost the country millions of pounds in sunk tankers and appreciated dollars to buy petrol and lubricating oil to get the point home.

We are horribly short of timber—but we have ideal land for oak, beech and firwood growth, yet one has to look far to find any investigation on the soil stimulation for arboreal growth or for afforestation and its attendant requirements. The County of Kent has studied fruit and reaped the reward of what is now a thriving industry. Our natural woods and forests are neglected, piteous in their appeal for thinning and the care of fittest specimens. We have seen or known of the spectre of land erosion in the U.S.A., entirely due to deforestation and deprivation of mist pockets. Let it not be so here, for the present rate of promiscuous cutting will be felt for years.

Turning to the land and its products, we import the bulk of our grain, numerous items of food and many of our solvents: to cite a home example, the normal breakfast table is generally adorned with an overseas prepared cereal. The farmer, poor fellow, has struggled to survive the spate of wheat growth from virgin soils abroad; and the farming industry has lost its old skill in husbandry and its indispensable helpers since the token offers more pay for the latter, and a cinema for his ladies. This is wrong, and since mother earth is in fact the giver of all requirements, we must turn ultimately to the earth to refresh our finance and restore our lost balance.

The ultimate salvation of the farmer means adjustment and enrichment of soil to crop—a wealth of work to the chemist and chemical engineer. We want fixed nitrogen products cheaply culled from that costless raw material, the air. Those products should be in the form of real plant food and not as stimulants exciting vegetation to rob the soil unduly of its humus ingredients and thus ultimately to produce soil sterility. We want plant food that will supplement normal growth with benefit to both land and vegetation.

Quite apart from national needs fortunes wait on the chemical engineer who can convert to farm use the tens of thousands of tons of sewage that daily are allowed to suffer

bacteriological change or are discharged untreated to our estuarial waters. We use methane gas evolved in sewage decomposition for driving the sewage power plant, but the latent nitrogen and the salts extracted from the earth by foodstuffs are lost and depart down a pipe line to foul our fishing grounds. The main problem for solution in this regard is cheap dehydration, whilst suitable processes for nitrogen fixation and production of transportable products offer enough to satisfy the greed of the most insatiable research worker.

We have more or less unlimited coal, plenty of limestone, and here and there small but useful supplies of high level water for production of electrical power; and we can by these originating factors start on a campaign for the manufacture of basic materials for synthesis. To quote a few examples, calcium carbide is just at the moment an unknown manufacture in this country. Pre-war, we imported from Canada, Norway, Germany and the Rhone Valley 40,000 to 50,000 tons per annum. This importation is but the output of a 20,000 K.V.A. furnace. Germany makes on her own soil some 600,000 tons, the bulk of which goes into synthetic products evolved from acetylene. These products include acetaldehyde, acetic acid, acetone, acetic anhydride, and numberless products such as oxalic acid, vinyl esters, the methyl and ethyl and butyl series of compounds, pharmaceutical materials, dyestuffs, solvents and plastics.

This reveals a vast panorama and a field that we have not only to explore, but extend, if we are to keep our place in production. Acetylene, however, is only one of the many starting materials for synthesis. There are the heavier molecular materials such as toluene, benzene, phenol, naphthalene and the like—all indigenous products from coal distillation with a host of compounds easily yielding to synthetic architecture and giving solvents, aromatic compounds, intermediates and dyes for peace-time use, or alternatively for war. Our ceramic industry obtained an enormous fillip in the 1914-1918 struggle. We are still behind the more progressive knowledge of other lands; and the repeat production of flawless material of high dielectric constants opens up a new and much coveted field in which the oxides of many of the rarer metals all play their part.

### Catalysis

Many of the reactions of to-day depend upon catalysis. Catalytic reagents are a branch of specialised knowledge by itself and the guiding signposts are purity, fine division and ease of reactivation. Synthetic oil production depends entirely upon catalysis and the resistance of the catalyst to sulphur and other adventitious impurities. The work of Dr. Marie Stopes, who classified the components of coal, opened a vista of work to those who would follow after and endeavour to eliminate sulphur, phosphorus and arsenic from our carbonaceous supplies. This elimination would give an enormous impetus to our steel, cast and wrought iron supplies and ease all of our metallurgical operations. Much work in this direction has been done, both abroad and, in a very small but important degree, here. Much remains to be done, but once the chemical problem is exposed the engineering problems should not require more than ingenuity for solution. Since we bring 250 million tons of coal per annum to the surface and our steel production is 12 million tons per annum, there is unlimited room for scope and reward. *This problem is basic to our industrial life.*

The recovery of useful products from waste material again opens up many fields of inquiry. Much work has been done in the recovery of trade wastes such as in the treatment of wool washings and in other directions. The utilisation, however, of leather refuse, beer grains, vegetable waste, chaff and allied matter, has yet to be economically tackled. The problems are those of extraction, dehydration, disintegration and pressure filtration, and many kindred engineering processes. In compression machinery that will continuously work to very high pressures, we are behind. On the question of imports why do we continue to buy in addition to the products already mentioned—matches, liquors, starch, scents, cosmetics, dyes,

glass, plastics, chemical stoneware, intermediate products, synthetic drugs, ferro alloys and a host of like goods? In the majority of cases there is no need whatever, but industry can flourish only if given an initial stimulus and a quiet period of incubation.

We were told twenty years ago that beet sugar could not be produced here. The Government, however, was prevailed upon to grant a bonus, but a decreasing bonus for manufacturers over a series of years. The result was magical, many factories were built and much of our sweetness to-day is cry-

tallised from our fields and farms. There, chemical engineering quickly came into its own. In the same way, and I firmly believe without being in the least nationally egotistical, we can say we have the necessary knowledge and mental ingenuity in this country for the solution of the problems presented. Given a static period free of unwise governmental and political interference, with freedom from subsidised competition, we can achieve great strides towards post-war safety and happiness in these Isles, and in those strides chemical engineering will have no uncertain path ahead.

## The Institution Luncheon—Mr. Alexander's Speech

**M**R. HERON ROGERS was in the chair at the luncheon of the Institution, which, as last year, took the place of the usual peace-time dinner. This year the venue was the Connaught Rooms.

MR. H. TALBOT, honorary registrar, in a brief and amusing speech, proposed the health of "His Majesty's Ministers," tilting with humorous invective at the Minister of Food and the Chancellor of the Exchequer. The RT. HON. A. V. ALEXANDER, First Lord of the Admiralty, in response, referred first to the measure of stability which the current crisis had introduced into the Government. There was no time now for controversy! it was a question of "all hands to the plough, all forces and all views to the one object." He expressed official acknowledgment of the valuable help which has been received from chemical engineers. Much that had been done would have been impossible without their knowledge and their support. He knew from personal experience the capability of chemists in the training of men, as he had himself been for many years Chief Clerk to the Education Authority of Somerset, and his chief there had been a chemist. The importance of the chemical engineer in maintaining the standard of materials was paramount, as this war was a war of weapons, and the standard of weapons was of vital importance. Our standard of scientific and technical knowledge and practice was no whit inferior to Germany's.

In his work at the Admiralty he had learnt four special things: first, never to regard a position as hopeless—especially under a leader like Churchill; second, never to underestimate a task; third, not to be unduly depressed by criticism, but to be stimulated by any that happened to be constructive; lastly, to cultivate a state of mind which, in the words of St. Paul, knew "how to be abased and how to be exalted." We should make profitable use of all the means in our power to encompass the defeat of the enemy—an enemy who would deny to mankind the enjoyment of all rights without molestation.

Hitler in his own book, "Mein Kampf" had acknowledged the power of Britain when really roused—the will to self-preservation and the will to fight through to the end. That was the spirit that had changed the attitude of last June to the present attitude of victory. What we had achieved had persuaded the United States that we were worth helping, and that our combined forces could aid in the establishment of a position of confidence towards world-wide reconstruction.

Going on to speak "off the record," Mr. Alexander recalled that we had our ups and downs in this war; but that at Dunkirk we had seen what British military science and equipment could do when backed by British character, while in the air, after winning the Battle of Britain, we were now dealing blow after blow against the enemy. Faith in the resources and courage of our own people was what was necessary. Mr. Alexander concluded by reading extracts from an essay by Rider Haggard published in 1898, which prophesied an "Armageddon" ending in a peace with terms dictated by Britain and the U.S.A., and which contained the memorable phrase: "Man will be free and will fight till he is free."

MR. C. S. GARLAND, president-elect, proposed the toast of "Our Guests," in which he made special reference to the presence of Dr. Gerbrandy, Prime Minister of the Netherlands, and of M. Simopoulos, the Greek Minister. Response was made by DR. P. S. GERBRANDY, who confessed that he had forgotten most of the chemistry he knew 30 years ago, but reminded us that the splendid laboratories of the Dutch East

Indies were available in the common interest of his country and ours. SIR ERNEST LEMON, Director-General of Aircraft Production, likewise replied; he made the interesting suggestion that an "Industrial General Staff" should be created, on the lines of the military staffs, to deal with problems of import or export trade likely to be vital in war time. SIR LEOPOLD SAVILE, President of the Institution of Civil Engineers, proposed "The Institution of Chemical Engineers," and response was made by the President.

Among those present were: Mr. H. Ballantyne, Mr. T. H. Board, Dr. W. T. K. Brauholtz, Mr. S. E. Carr, Mr. T. P. Carr, Mr. T. S. Chéggidden, Maj.-Gen. J. S. Crawford, Air Marshal W. Sholto Douglas, Mr. R. Murdin Drake, Mr. R. Duncalfe, Dr. H. J. T. Ellingham, Dr. J. J. Fox, Dr. G. E. Foxwell, Mr. O. V. Guy, Sir Harold Hartley, Mr. W. J. Jordan, High Commissioner for New Zealand, Sir William Larke, Sir Allen Mawer, Rt. Hon. Lord Melchett, Dr. Stephen Miall, Prof. A. W. Nash, The Hon. S. M. Lanigan O'Keeffe, High Commissioner for Southern Rhodesia, Mr. J. C. Orkney, Mr. P. Parrish, Prof. J. C. Philip, Mr. R. B. Pilcher, Mr. H. J. Pooley, Mr. J. Davidson Pratt, Mr. J. F. Ronca, Sir Henry Tizard, Prof. S. G. M. Ure, Dr. G. S. Whitby.

## Chemical Matters in Parliament

### Continued Need for Exports to U.S.A.

**I**N the House of Commons last week, Mr. Pickthorn asked the President of the Board of Trade if he could make any statement about the effect on the United Kingdom export policy of the Lease and Lend Act.

Mr. Oliver Lyttelton replied that this country needed more and more supplies of every kind from the United States. H.M. Government were grateful for the ungrudging aid which they had already received, and were fortified by the assurance which the Lend-Lease Act provided for continued supplies of essential goods. Our need for dollars, however, remained very great, and anything which added to our dollar earnings was a contribution of first rate importance to our cause. That was one reason why the Government still regarded it as a necessity to maintain and extend exports to the United States, and continue to give every assistance to that trade. The extent to which this purpose could be achieved depended largely on the response of buyers in the United States, and he trusted that they would continue to ask for our products. Experience would, he thought, have demonstrated to them our ability to produce and deliver the goods and to maintain their traditional high quality.

DR. R. F. BOWLES has agreed to give a résumé of his thesis on "The Gelation of Linseed Oil Films in the Presence of Cobalt" (which has been published in recent issues of *J. Oil and Colour Chem. Assoc.*) at a meeting of the London Section of the Association to be held at the Charing Cross Hotel, London, on May 8, at 6 p.m. The discussion will be opened by Prof. E. K. Rideal, Professor of Colloid Science, Cambridge University, and other speakers who have promised to take part are Dr. L. A. Jordan, Director of the Paint Research Station, Dr. G. L. Riddell, Director of the Printing Ink and Allied Trades Research Association and Mr. Emil Hatschek.

## Personal Notes

MR. CHARLES SAMUEL GARLAND, A.R.C.S., B.Sc., F.C.S., F.I.C., M.I.Chem.E., the new President of the Institution of Chemical Engineers, was born in London in 1887. He received his education at Wilson's School and at the Royal College of Science, graduating in 1909 with the B.Sc. degree. He began his career as demonstrator at the Royal College of Science in 1909, and the following year lectured at the Imperial College of Science and Technology, London. He joined the Volker Lighting Corporation in 1910 as works manager, becoming a director in 1912. In 1921, when



Mr. C. S. Garland,  
the new President  
of the Institution  
of Chemical En-  
gineers

Thorium, Ltd., of which he was a director, and the Volker Lighting Corporation were consolidated with Lighting Trades, Ltd., he became managing director. Mr. Garland served as managing director of the Clay Ring Co., Ltd., and W. A. Ward and Co., Ltd., from 1917 to 1928, when both companies were merged with Steatite and Porcelain Products, Ltd., and he retained his position as managing director. He has been managing director of Stream-Line Filters, Ltd., since 1923, and chairman since 1936. In 1932 he became managing director of British Pix Co., Ltd., Pix Valves and Pix-Crosley Co., Ltd., and later he was appointed chairman. Mr. Garland serves as chairman of the Metafiltration Co., Ltd.; Active Oxygen, Ltd.; Trinidad Oil Lands, Ltd.; United Insulator Co., Ltd.; and many other companies. From 1922 to 1923 he was Conservative M.P. for South Islington, being the first member of the Junior Imperial League to be elected to the House of Commons. He served as chairman of the Joint Industrial Council of the Gas Mantle Industry for five years from 1920. Since 1923 Mr. Garland has been representative of the Crown on the Governing Body of the Imperial College of Science and Technology, and is a member of its Finance and Executive Committees. In addition he is a member of the Governing Body of City and Guilds Engineering College and has been a member of its Finance and Executive Committees since 1924. Actively identified with chemical societies, Mr. Garland was one of the founders (1924) of the Institution of Chemical Engineers, has served as member of Council, honorary registrar and vice-president. He was instrumental in the organisation of the British Association of Chemists, and for a time was vice-president and later president. Since 1920 he has been vice-president of Society of Chemical Industry, and a member of Council since 1916. He has been honorary treasurer of the National Union of Manufacturers since 1923, and is a member of the General Chemical Council.

MR. GEORGE C. BATEMAN, B.Sc., president of the Canadian Institute of Mining and Metallurgy and Secretary-Treasurer of the Ontario Mining Association, has been appointed Metals Controller for Canada.

MR. F. HARTLEY, B.Sc., Ph.C., A.I.C., and MR. R. H. JACKSON, B.Sc., B.Pharm., Ph.C., A.I.C., have been elected members of the Society of Public Analysts and Other Analytical Chemists.

MR. R. J. LOW, M.I.Chem.E., A.M.I.Mech.E., late chief engineer of Howards and Sons, Ltd., joined Fredk. Boehm, Ltd., on April 1, and is now acting in a similar capacity for them and their associated companies.

At the annual general meeting of the Federation of British Industries held in London on April 9, LT.-COL. LORD DUDLEY GORDON, D.S.O., was elected president for the second successive year.

ENGINEER WILLIAM M'KAY, R.N.R., 63 Tullos Crescent, Aberdeen, who was decorated with the D.S.M. at a recent investiture at Buckingham Palace, was before the war employed with Messrs. John Miller and Co., Sandilands Chemical Works, Aberdeen.

SIR LAWRENCE BRAGG, F.R.S., and DR. CHARLES DARWIN, F.R.S., arrived in Ottawa on Friday last week. Sir Lawrence Bragg will work at the National Research Buildings there in co-operation with Professor Fowler as liaison with Canadian scientists. Dr. Darwin will go shortly to Washington to establish a similar liaison there.

Following a long and severe illness, LT.-COL. W. A. VIGNOLES, D.S.O., has been obliged to relinquish his appointment as Senior Managing Director of Evershed and Vignoles, Ltd. MR. J. C. NEEDHAM succeeds him in that capacity, and MR. M. VINES and MR. D. D. WALKER have been appointed additional managing directors. Colonel Vignoles, who is rapidly regaining strength, remains a member of the board of the company. Colonel Vignoles worked as an apprentice with the predecessors of the company, W. T. Goolden and Co., joining that firm nearly fifty years ago in the autumn of 1891.

## OBITUARY

MR. WILLIAM BURTON, M.A., F.C.S., who died in London on April 3, aged 78, was formerly managing director of Pilkington's Tile and Pottery Co., Clifton Junction, Manchester. He was elected a Fellow of the Chemical Society in 1890.

PROFESSOR ARTHUR LAPWORTH, F.R.S., who died in Manchester on April 5, in his 69th year, was noted in the field of both inorganic and organic chemistry. He was a native of Galashiels, and was educated at St. Andrews and Birmingham, graduating B.Sc. at Mason College, later the University of Birmingham, where his father was the first Professor of Geology. After research experience in organic chemistry at the City and Guilds Institute, he held many academic appointments. He first held a lectureship in chemistry at the Pharmaceutical Society and was then head of the chemistry department at the Goldsmiths' College; then, in 1909, he was appointed senior lecturer in inorganic and physical chemistry and assistant director of the inorganic laboratories in the University of Manchester. In 1913 he was elected to the Royal Society and succeeded to Professor W. H. Perkin's chair of organic chemistry, also at Manchester. He followed Professor H. B. Dixon there as Sir Samuel Hall Professor in 1922, and retained the chair until his retirement in 1935. During this period he was awarded honorary degrees by both his old universities and (in 1931) received the Davy Medal of the Royal Society. To his work on the mechanism of the reactions of organic compounds and the effect of molecular structure on chemical activity he brought a remarkable power of insight and an unusual grasp of the multiplicity of different branches into which chemistry is to-day divided. The University of Manchester will always owe him a debt of gratitude for the selfless devotion which he unfailingly applied to the furtherance of its chemistry departments.

## Ammonium Nitrate from Coke-Oven Gas

### German War-Time Expedient

THE Spanish Civil War reduced Germany's supplies of pyrites, and subsequent developments have apparently rendered it necessary for her to conserve sulphuric acid supplies by making ammonium nitrate, where possible, in place of the more usual ammonium sulphate for fertiliser use.

The difficulties met with have been described (*Chem. Eng.*, 1941, 120), and it appears that, as would be expected, attempts to utilise nitric acid for the absorption of ammonia direct from coke-oven gas in the usual way resulted in a relatively large loss of nitric acid through oxidation of the hydrogen sulphide also present. Experiments showed that if a temperature below 90° C. was not exceeded the oxidation was reduced but not eliminated. Thus a 10 per cent. loss of nitric acid occurred at 118° C., 5 per cent. at 70° C., but only 1.6 per cent. at 90° C. if absorption took place near neutrality. The utilisation of the heat of reaction for evaporation of water brought into the system by the reactants would, however, make it necessary to work under reduced pressure if such relatively low temperatures were used. An alternative process was to remove the hydrogen sulphide before absorption of the ammonia, and where the ammonia was first to be concentrated for collection at a central neutralisation plant, this could be effected sufficiently by passing an inert gas through the ammoniacal solution with subsequent recovery, if desired, of the sulphur. Direct recovery at the coke-oven was, however, desirable, and it was found that by adding monoammonium phosphate equivalent to 15-20 gr. of P<sub>2</sub>O<sub>5</sub> per litre of the absorbing solution the oxidation of hydrogen sulphide was inhibited almost completely. It is probable that this resulted in the removal of ionised ferric iron by complex formation, it being thought that these ions catalysed the oxidation, but a further possibility is that the slight buffer action of the phosphate enabled the absorption to be carried out at a generally higher pH.

## The Perfect Turpentine Still

### Recent American Practice

TURPENTINE stills have received a considerable amount of attention from the Naval Stores Research Division of the Bureau of Chemistry and Engineering, Washington; the result of their investigations is put forth in a comprehensive booklet (Miscellaneous Publication, No. 387). Their object is to develop new methods of working, improve products, and lower the cost of production. In the case of turpentine a number of suggestions and designs for both still and other equipment are offered together with plans and lists of material to be used. Among the suggestions importance is placed on the location of the still; sloping ground is advantageous and a copious supply of water should always be at hand. Seven to ten acres of ground will accommodate domestic quarters and a 2000-barrel rosin yard, allowing for ideal spacing between all buildings and thus securing minimum insurance rates. Altogether there are plans of four different types of still, beginning with a single still capable of producing up to 1500 units of turpentine annually. Specifications of a worm condenser and directions for setting a fire still are given. Finally, notice is drawn to the question of separators and dehydrators, and efficient plant of this nature is recommended. As much as one to two gallons per charge is the estimated loss of turpentine at the average fire still through having an uncovered separator; while water causes most of the leaks in a wooden barrel after it has left the still, in addition to lowering the quality of the turpentine. The booklet is provided with full explanations, based on actual practice, as well as illustrations, and its language and lay-out are such that its directions might be understood by the veriest amateur.

## A New Terpene Polymer

### Nypene Resin

A NEW terpene polymer resin, called Nypene Resin, has been introduced by the Neville Co., of Pittsburgh, U.S.A. The new material has a melting point of 140°-150° C., pale colour, and is neutral and non-saponifiable. It has good resistance to water, acids, and alkalies. The most interesting properties of the resin are said to be its compatibility with paraffin, natural and mineral waxes, and its exceptional softening action on rubber.

Originating from turpentine, Nypene differs from rosin in that it has a strictly hydrocarbon structure. On intensive exposure to ultra-violet rays it yellows less than ester gum, and very much less than coumarone or petroleum resins, and is comparable to a good grade of wood rosin though, of course, superior reagent resistance. The specific gravity is less than one (about 0.98).

As a solution or cut-back, Nypene imparts initial tack to latex. Blended with 60 per cent. rubber, it behaves as a pressure-sensitive adhesive, suitable for most jobs except rubber to rubber. Nypene, although physically a resin, shows a remarkable similarity to rubber. The hydrogen-carbon ratio is high, approximately the same as rubber. It is insoluble in acetone. While not compatible with vulcanised rubber, it is compatible with all grades of polybutenes in all proportions.

## Electrochemical Protection of Aluminium

### An Apparent Anomaly

THE use of relatively electropositive metals such as zinc in contact with steel or bronze for the purpose of protecting the last two metals against corrosion is commonplace practice in marine engineering and for any similar conditions. The use of an externally applied direct current has also been used, for example, in the protection of buried pipelines from corrosion. In all these cases protection is provided by making the surface to be protected more negative relative to the solution than it normally is under the prevailing conditions of composition and concentration of the solution; in fact, it must be sufficiently negative for the tendency to be in the direction of deposition of the metal in order to ensure protection.

What is apparently an anomalous case of electrochemical protection has been claimed by the Aluminium Company of America. They state that protection of aluminium against corrosive waters is afforded by zinc bars or sheets attached to the aluminium in the usual way, in spite of the large potential by which aluminium is generally considered to be negative with respect to zinc in the presence of normal concentrations of the respective ions, and on account of which the aluminium would normally be expected to dissolve, with protection of the zinc.

Possibly the explanation is that the small concentration of zinc ions produced by this arrangement produces some reaction with the protective film on the aluminium surface and by a purely chemical action renders it less pervious.

## LETTER TO THE EDITOR

### The "C.A." and the Forces

The following letter, which arrived on Tuesday from "Somewhere in England," speaks for itself:

SIR.—Since being in H.M. Forces I have been, fortunately, receiving each week a copy of THE CHEMICAL AGE, free of charge.

Throughout the intensive "blitz" period, this periodical has reached me each week without fail. May I offer you my sincere thanks for your generosity?—Yours faithfully,

C. W. STONE, Corporal.

Northants. Regt.

## New Control Orders

### Coal Tar Products

THE Secretary for Mines has issued Directions in respect of anthracene and phenol which will come into operation on April 14. The effect of the Directions, which are published in full in the Board of Trade Journal, is as follows.

#### ANTHRACENE

1. In pursuance to paragraph 3 of the Control of Coal Tar Order, 1941, no "distiller" or "importer" (for definition see paragraph 11, S.R. and O. 1941, No. 81, Control of Coal Tar Order, 1941, dated January 20) may dispose of coal tar distillates or products separated theretrom, containing anthracene in quantities amounting to 15 per cent. or more, except under the authority of a licence.

2. In pursuance to sub-paragraph 1 of paragraph 8 of the Control of Coal Tar Order, 1941, no person may dispose of crude anthracene "A" quality containing 40 per cent. or more of anthracene except at the price of 8d. per unit delivered at consumer's works, and no person may dispose of anthracene paste containing 15 per cent. of anthracene and less than 40 per cent. of anthracene except at the price fixed in the following schedule:—

Percentage of anthracene contained in the anthracene paste.	Price per ton f.o.r. at producer's works.	£ s. d.
15 per cent. and less than 16 per cent. ... (with an increase of 6s. per ton for every 1 per cent. of anthracene, up to and including 25 per cent. anthracene).	8 0 0	
26 per cent. and less than 27 per cent. ... (with an increase of 8s. per ton for every 1 per cent. of anthracene, up to and including 30 per cent. anthracene).	11 8 0	
31 per cent. and less than 32 per cent. ... (with an increase of 10s. per ton for every 1 per cent. of anthracene, up to and including 35 per cent. anthracene).	13 10 0	
36 per cent. and less than 37 per cent. ... (with an increase of £2 per ton for every 1 per cent. of anthracene, up to and including 39 per cent. anthracene).	17 0 0	

For the purpose of these Directions, the quantity of anthracene in the product is to be determined by the anthraquinone test as laid down in the 1938 edition of "Standard Methods of Testing Tar and its Products."

#### PHENOL

In pursuance to paragraph 3 of the Order above referred to, no distiller or importer may dispose of phenol or phenol mixtures, except under the authority of a licence. Phenol and phenol mixtures for the purpose of this Direction shall be defined as follows.

**Phenol:** Carbolic acid derived from any source and having a melting point within the range 39°-41° C. inclusive as determined by the method defined in the 1938 edition of "Standard Methods of Testing Tar and its Products."

**Phenol Mixtures:** Mixtures of phenol with any diluent and containing not less than 80 per cent. by weight of phenol as determined by the method defined in the 1938 edition of "Standard Methods of Testing Tar and its Products."

#### Extension of Sterling Area

By a Treasury Order which came into force on April 2, the following territories are added to the sterling area: (1) Territories under the control of the Council of Defence of the French Empire—French Equatorial Africa, Cameroons under French mandate, French Oceania, French Establishments in India; (2) Iceland and the Faroe Islands.

## Olefine Oxides

### Improvements in Manufacture

DIRECT oxidation of ethylene and other cheap olefines is now accomplished on the large scale by passing the gases in admixture with air over a silver catalyst at high temperature. To reduce the wastage of expensive catalyst a process has been evolved (B.P. 524,759; Carbide and Carbon Chemical Corporation) in which the gaseous mixture is passed at a relatively high mass velocity through a catalyst chamber in the form of a long narrow tube heated to 150–400° C. The mixed gases may contain about 2.5 per cent. ethylene and the silver oxide can be supported on a material such as chemically bonded fused alumina.

Excessive formation of carbon dioxide is one of the dangers to be guarded against during the oxidation reaction. Investigation has revealed that a remarkably large number of volatile or gaseous substances (both organic and inorganic) are able to suppress or retard carbon dioxide formation even when present only in traces. According to B.P. 518,823 of the same concern, they include hydrocarbons (xylene, hexane), nitrogen compounds (*o*-nitroanisole, aniline), sulphur compounds (sulphur trioxide, hydrogen sulphide), organic compounds containing both hydrogen and oxygen (ketones, acids, etc.), and halogens and their compounds (chlorine, hydrochloric acid, ethylene dibromide, ethylene dichloride, dichloroethyl ether, monochlorobenzene, carbon tetrachloride, etc.). Of these the most useful are the halogen compounds, since they not only suppress carbon dioxide formation, but promote that of ethylene oxide. These "anti-catalysts" are effective in proportions of the order of less than 0.1 per cent. (based on the total volume of reactants), and it is probable that they form double compounds with the silver catalyst.

#### Ethylene Oxide Recovery

Another problem recently solved is that of the large-scale economical recovery of ethylene oxide from the very dilute aqueous solution in which it is present after preliminary treatment of the crude reaction product issuing from the catalyst chamber. A plant giving satisfactory results (B.P. 533,054; U.S. Industrial Alcohol Co.) consists of a tower in which a descending stream of very dilute aqueous solution of ethylene oxide meets an ascending current of steam under conditions such that no steam condensation occurs in the tower. The liquid flowing out of the bottom of the tower is subsequently compressed to atmospheric pressure when the steam condenses, and the pure ethylene oxide can be dissolved in water to form a solution of any desired strength. Ethylene glycol is made by heating the solution in a pressure vessel at 100–200° C. in the absence of a catalyst.

## A Tool for Research

### The Electron Microscope in Industry

IT is reported that the American Cyanamid Company's laboratories now have an electron microscope and have already used it on an industrial problem. It utilises electromagnetic focusing of the electron beam and produces the image, with a possible magnification of  $\times 100,000$ , on a fluorescent screen or photographic plate. With its aid it has been found that a new calcium carbonate pigment, the crystalline nature of which had been in considerable doubt, and which is in use by the paper industry, is in reality crystalline—almost as perfectly so as well-known materials with large crystals. Would it be too much to hope that the National Physical Laboratory may make available to the smaller industrialist in this country a similar instrument, which should be a very valuable research tool in skilled hands?

## General News

THE CLAYTON ANILINE CO., LTD., have made a donation of ten guineas to the Manchester Technical Library Fund.

THE BUSINESS INSURANCE SCHEME under the War Damage Act, details of which were given in THE CHEMICAL AGE last week, will come into force on April 17. A leaflet giving instructions will be published by the Board of Trade as soon as possible.

FACTORY FORM 1999, being a certificate of exemption for chemical works from the Factories (Standards of Lighting) Regulations, 1941, has been issued by the Ministry of Labour and National Service (price 1d., post free 2d.).

THE FIRM OF FLETCHER MULLER, LTD., oil manufacturers, of Alma Mills, Hyde (formerly of Ashton and Dukinfield), celebrated its jubilee last week. Mr. S. Rowbottom, chief chemist, mentioned that the firm had outgrown two works in 25 years and was still growing.

FACTORIES FOR CONVERTING SEAWEED into cattle and poultry food may shortly be set up in West Scotland. Factory sites have been found, and there is every indication that the seaweed industry in the Isles may be revived on a bigger scale than ever before.

THE CHAIRMAN OF THE Southport Transport Committee told the town council last week that a local firm of tar oil distillers had obtained permission from the Ministry of Mines to supply the committee with creosote. They intended to apply immediately to the Traffic Commissioners to operate increased bus mileage with this fuel.

PRINCE BERNHARD, accompanied by the Netherlands Prime Minister, Dr. Gerbrandy, last week visited Unilever House, where he was received by Mr. Paul Rykens, a Dutch member of the Board, and presented to Lord Leverhulme, governor, and Mr. F. D'Arcy Cooper, chairman of Lever Bros. and Unilever Ltd.

THE BOARD OF THE INSTITUTE OF PHYSICS has elected the following as Fellows of the Institute: W. Betteridge, B.Sc., Ph.D.; J. W. Drinkwater, B.Sc., Ph.D.; G. B. Harrison, B.Sc., Ph.D.; V. G. W. Harrison, B.Sc., Ph.D.; E. B. Pearson, M.Sc.; G. Spiegler, Ph.D.; and W. A. Wooster, B.Sc., M.A., Ph.D. In addition, ten new Associates have been elected, and two Subscribers and eleven Students admitted.

BY A RECENT DECISION of the Manchester Tribunal for Conscientious Objectors, James W. Newell was registered conditionally as a conscientious objector. Described by the chairman as an "honest dreamer," Newell was stated to be an Australian, who came to England to work as a chemical engineer, but gave this up because his firm was doing war work. He is now doing his honest dreaming as a poultry-farm labourer at Ramsbottom.

MR. H. W. L. REDDISH, A MEMBER OF THE War Emergency Committee of the Cement Makers' Federation, said last week that the net profit on a ton of cement did not exceed the cost of the paper bags in which it was packed. He also denied that there had been any shortage of cement last summer and early autumn. At no time did cement and clinker stocks in manufacturers' works fall below 322,000 tons. To-day they were several times this amount.

THE PART ALUMINIUM IS TO PLAY in reconstruction, replanning, and the turning over of workshops to peace-time needs will be considered by a group of well-known architects and designers, according to a recent announcement. Invitations to join the group have been issued, among others, to Mr. Christian Barman, F.R.I.B.A., Mr. Grey Wornum, F.R.I.B.A., Mrs. Grace Lovat Fraser, and Mr. Michael Rachlis, and they are already at work devising ways of making use of the special properties of aluminium.

THE DIRECTORS OF BURGOYNE, BURBIDGES & Co., LTD., manufacturing chemists of East Ham, state that it has come to their knowledge that there have been rumours to the effect that the business was to be acquired by another company. They wish it to be known that such rumours are without foundation. The business of their company has been built up over 200 years, and throughout this period has been under British ownership and British direction—and so it will continue.

## From Week to Week

MORE SULPHATE OF AMMONIA is being used this spring than ever before on farms, gardens and allotments. Last year's allocation was 23 per cent. higher than any previous record. In the year before the war about 400,000 tons were produced in Britain, but over three-quarters of this was exported. There has therefore been an ample margin, from which increasing home consumption can be met.

THE CENTENARY OF THE PHARMACEUTICAL SOCIETY OF GREAT BRITAIN, which occurs next week, will be the subject of a broadcast talk by the president, Mr. Walter Deacon, on Sunday, April 13, at 6.45 p.m. A thanksgiving service at St. Pancras Parish Church on Tuesday morning, April 15, at 11 a.m., will be followed at 2 p.m. by a commemorative meeting at Conway Hall, Red Lion Square, and an informal dinner in the evening. The annual meeting of the British Pharmaceutical Conference will begin at 10 a.m. the next day, and will be followed at 11.30 a.m. by a meeting of branch representatives at Conway Hall, and at 2.30 p.m. by a science session at the Imperial Hotel, Russell Square.

### Foreign News

IODIDE OF COPPER HAS BEEN EXEMPTED from payment of the Netherlands East Indies Defence Export Duty.

TWENTY-NINE MANUFACTURERS in New Zealand have been licensed for the production of soap and soap powder, under the stimulus of import restrictions.

ACCORDING TO FIGURES COMPILED by the National Fertiliser Association, United States production of superphosphate during 1940 totalled 3,784,405 tons and shipments 4,096,643 tons, compared with 3,297,502 tons and 3,779,287 tons respectively in 1939.

SENATOR P. A. M. McBRIDE, Commonwealth Minister for Munitions, announced at Canberra last week that an extensive group of Commonwealth Government explosives factories was to be established in New South Wales at a cost of several million pounds.

THE MANUFACTURING CHEMISTS' ASSOCIATION, Washington, D.C., has published the first edition of "Chemical Facts and Figures" (219 pp., 65c.). This contains collated statistical information as to production, imports and exports of chemical commodities in America, in most cases back to 1929 or earlier, all with references to the original source of information, and in normal circumstances would be of considerable value to executives and technologists in the U.K.

### Forthcoming Events

IN PLACE OF THE ANNUAL DINNER DANCE, the Midland Committee of the Society of Chemical Industry has arranged a formal luncheon at the Midland Hotel, Birmingham, at 1.30 p.m., on April 26. Ladies may be invited. After short speeches there will be dancing, followed by a display of cinematograph films until 5 p.m. Tickets, application not later than April 21, can be had from George King, for 7s. 6d. each, at 39 Upland Road, Selly Park, Birmingham, 29.

THE 47TH JAMES FORREST LECTURE of the Institution of Civil Engineers, Great George Street, London, S.W.1, will be delivered on April 29, at 1.30 p.m., when Professor E. N. da C. Andrade will talk on "The Mechanical Behaviour of Solids."

THE NEXT MEETING of the Colour Group of the Physical Society will be held at 2.30 p.m. on April 30, at the Royal Photographic Society, 16 Prince's Gate, London, S.W.7. Mr. H. W. Ellis, B.Sc., F.I.C., will demonstrate the samples illustrating his paper on "Colour Tolerance" which he read at the meeting held on February 12. A paper on "Colour Terminology" will be read by Mr. H. D. Murray, M.A., F.I.C.

A JOINT MEETING of the Coke Oven Managers' Association and the Institute of Fuel will be held on April 30, at the Royal Victoria Station Hotel, Sheffield, at 2.30 p.m., when Dr. E. W. Smith (Woodall-Duckham Companies) will present a paper entitled "Research and the Coking Industry," to be followed by a discussion.

THE B.A.C. LONDON SECTION'S annual meeting will be held on May 3 at the Café Royal, Regent Street, W.1, at 3 p.m.

## Weekly Prices of British Chemical Products

**R**EPORTS from most sections of the market indicate a quieter demand with new bookings covering small quantities to meet immediate requirements. On the other hand, contract deliveries are fully maintained, and there is a substantial movement in most of the controlled items. Among the soda products hyposulphite, caustic and chlorate are active, with the last-named product firm on scarcity of offers. A firm tone prevails in the potash section and elsewhere in the market the price position is firm and unchanged. A moderate weight of enquiry for the lead oxides is reported and formaldehyde is in good request. A fair export enquiry continues to be maintained in most sections. With the exception of pitch, which continues to be in moderate request, most of the coal tar products are enjoying an active demand. Cresylic acid is again a feature of the market with a substantial export enquiry in circulation. The quotations for cresole oil and crude carbolic acid are firm, and naphthas are enjoying a steady trade.

**MANCHESTER.**—New business in heavy chemical products on the Manchester market during the past week has continued on moderate lines. Users of textile chemicals are still showing a fair amount of

interest and are taking reasonably good contract deliveries, though it is still expected that the concentration of production in the cotton mills and in the allied trades will before long be reflected in a contraction in the demand for many classes of heavy chemicals. Most other users are specifying for fair deliveries. Among the tar products cresylic acid has made a further slight recovery in values, and firmness is a marked feature of most other materials.

**GLASGOW.**—There is again no change in the Scottish heavy chemical trade position. Business for home and export is still quiet. Prices keep firm with a tendency to rise. Prompt delivery is extremely difficult.

### Price Changes

**Rises:** Chrometan, Copper Sulphate, Cresylic Acid, Iodine, Methyl Acetone, Potassium Iodide, Pyridine, Sodium Iodide, Sodium Sulphate (Manchester), Sulphur, Sulphuric Acid, Vegetable Lamp Black, Xylol.

**Falls:** Antimony Sulphide, Arsenic Sulphide, Wood Tar.

### General Chemicals

**Acetic Acid.**—Maximum prices per ton: 80% technical, 1 ton £39 10s.; 10 cwt./1 ton, £40 10s.; 4/10 cwt., £41 10s.; 80% pure, 1 ton, £41 10s.; 10 cwt./1 ton, £42 10s.; 4/10 cwt., £43 10s.; commercial glacial, 1 ton, £49; 10 cwt./1 ton, £50; 4/10 cwt., £51; delivered buyers' premises in returnable barrels, £4 10s. per ton extra if packed and delivered in glass.

**Acetone.**—Maximum prices per ton, 50 tons and over, £65; 10/50 tons, £65 10s.; 5/10 tons, £66; 1/5 tons, £66 10s.; single drums, £67 10s.; delivered buyers' premises in returnable drums or other containers having a capacity of not less than 45 gallons each. For delivery in non-returnable containers of 40/50 gallons, the maximum prices are £3 per ton higher. Deliveries of less than 10 gallons free from price control.

**Alum.**—Loose lump, £9 10s. per ton, d/d, nominal.

**Aluminium Sulphate.**—£8 to £8 10s. per ton d/d.

**Ammonia Anhydrous.**—1s. 7d. to 2s. 2d. per lb.

**Ammonium Carbonate.**—£39 to £40 per ton d/d in 5 cwt. casks.

**Ammonium Chloride.**—Grey galvanising, £22 10s. per ton, in casks, ex wharf. Fine white 98%, £19 10s. per ton. **MANCHESTER:** Grey galvanising, £22 10s. per ton. See also Salammoniac.

**Antimony Oxide.**—£68 per ton.

**Arsenic.**—99/100%, about £31 10s. per ton, ex store.

**Barium Chloride.**—98/100%, prime white crystals, £11 10s. to £13 per ton, bag packing, ex works; imported material would be dearer.

**Bleaching Powder.**—Spot, 35/37%, £10 7s. 6d. per ton in casks, special terms for contract.

**Borax, Commercial.**—Granulated, £26; crystals, £27; powdered, £27 10s.; extra fine powder, £28 10s.; B.P. crystals, £35; powdered, £35 10s.; extra fine, £36 10s. per ton for ton lots, in free 1-cwt. bags, carriage paid in Great Britain. Borax Glass, lump, £73; powder, £74 per ton in tin-lined cases for home trade only, packages free, carriage paid.

**Boric Acid.**—Commercial, granulated, £42 10s.; crystals, £43 10s.; powdered, £44 10s.; extra fine powder, £46 10s.; large flakes, £55; B.P. crystals, £51 10s.; powdered, £52 10s.; extra fine powdered, £54 10s. per ton for ton lots in free 1-cwt. bags, carriage paid in Great Britain.

**Calcium Bisulphite.**—£6 10s. to £7 10s. per ton f.o.r. London.

**Calcium Chloride.**—70/72% solid, £5 15s. per ton ex store.

**Charcoal Lump.**—£10 10s. to £14 per ton, ex wharf. Granulated, supplies scarce.

**Chlorine, Liquid.**—£21 7s. 6d. per ton, d/d in 16/17 cwt. drums (3-drum lots); 5½d. per lb. d/d station in single 70-lb. cylinders.

**Chrometan.**—Crystals, 5½d. per lb.; liquor, £23 per ton d/d station in drums.

**Chromic Acid.**—1s. 2d. per lb., less 2½%; d/d U.K. **GLASGOW:** 1s. 0½d. per lb. for 1 cwt. lots.

**Citric Acid.**—1s. 2d. per lb. **MANCHESTER:** 1s. 6d.

**Copper Sulphate.**—About £29 10s. per ton f.o.b. **MANCHESTER:** £29, less 2%, in 5 cwt. casks f.o.b. Liverpool.

**Cream of Tartar.**—100%, £10 2s. per cwt., less 2½%, d/d in sellers' returnable casks.

**Formaldehyde.**—£21 15s. to £25 per ton d/d. **MANCHESTER:** 40%, £22 to £25 per ton in casks d/d; imported material dearer.

**Formic Acid.**—85%, £47 per ton for ton lots, carriage paid, carboys returnable; smaller parcels quoted up to 50s. per cwt., ex store.

**Glycerine.**—Chemically pure, double distilled 1260 s.g., in tins, £3 15s. to £4 15s. per cwt., according to quantity; in drums, £3 7s. 6d. to £4 1s. Refined pale straw industrial, 5s. per cwt. less than chemically pure.

interest and are taking reasonably good contract deliveries, though it is still expected that the concentration of production in the cotton mills and in the allied trades will before long be reflected in a contraction in the demand for many classes of heavy chemicals. Most other users are specifying for fair deliveries. Among the tar products cresylic acid has made a further slight recovery in values, and firmness is a marked feature of most other materials.

**GLASGOW.**—There is again no change in the Scottish heavy chemical trade position. Business for home and export is still quiet. Prices keep firm with a tendency to rise. Prompt delivery is extremely difficult.

### Price Changes

**Rises:** Chrometan, Copper Sulphate, Cresylic Acid, Iodine, Methyl Acetone, Potassium Iodide, Pyridine, Sodium Iodide, Sodium Sulphate (Manchester), Sulphur, Sulphuric Acid, Vegetable Lamp Black, Xylol.

**Falls:** Antimony Sulphide, Arsenic Sulphide, Wood Tar.

### General Chemicals

**Hexamine.**—Technical grade for commercial purposes, about 1s. 4d. per lb.; free-running crystals are quoted at 2s. 1d. to 2s. 3d. per lb.; carriage paid for bulk lots.

**Hydrochloric Acid.**—Spot, 6s. 1½d. to 8s. 7½d. carboy d/d according to purity, strength and locality.

**Iodine.**—Resublimed B.P., 9s. 11d. to 13s. 11d. per lb., according to quantity.

**Lactic Acid.**—Dark tech., 50% by vol., £31 per ton; 50% by weight, £38; 80% by weight, £67; pale tech., 50% by vol., £39 10s.; 50% by weight, £46, 80% by weight, £74. Not less than one ton lots ex works; barrels returnable, carriage paid.

**Lead Acetate.**—White, £46 10s. to £48 10s. ton lots. **MANCHESTER:** £46 to £48 per ton.

**Lead Nitrate.**—About £15 10s. per ton d/d in casks.

**Lead, Red.**—English, 5/10 cwt. £42; 10 cwt. to 1 ton, £41 15s.; 1/2 tons, £41 10s.; 2/5 tons, £41; 5/20 tons, £40 10s.; 20/100 tons, £40; over 100 tons, £39 10s. per ton, less 2½ per cent. carriage paid; non-setting red lead 10s. per ton dearer in each case. Continental material £1 per ton cheaper.

**Lead, White.**—Dry English, less than 5 tons, £53 10s.; 5/15 tons, £49 10s.; 15/25 tons, £49; 25/50 tons, £48 10s.; 50/200 tons, £48 per ton less 5 per cent. carriage paid; Continental material £1 per ton cheaper. Ground in oil, English, 1/5 cwt., £62; 5/10 cwt., £61; 10 cwt. to 1 ton, £60 10s.; 1/2 tons, £59; 2/5 tons, £58; 5/10 tons, £56; 10/15 tons, £55; 15/25 tons, £54 10s.; 25/50 tons, £54; 50/100 tons, £53 10s. per ton less 5 per cent. carriage paid. Continental material £2 per ton cheaper.

**Litharge.**—1 to 2 tons, £41 10s. per ton.

**Lithium Carbonate.**—7s. 9d. per lb. net.

**Magnesite.**—Calcined, in bags, ex works, £14 to £17 per ton.

**Magnesium Chloride.**—Solid (ex wharf), £12 to £13 per ton. **MANCHESTER:** £13 to £14 per ton.

**Magnesium Sulphate.**—Commercial, £10 to £12 per ton, according to quality, ex works.

**Mercury Products.**—Controlled price for 1 cwt. quantities: Bichloride powder, 11s. 7d.; bichloride lump, 12s. 2d.; ammonium chloride powder, 13s. 5d.; ammonium chloride lump, 14s.; mercurous chloride, 13s. 9d.; mercury oxide, red cryst., B.P., 18s.; red levig. B.P., 15s. 6d.; yellow levig. B.P., 14s. 9d.; yellow red, 14s. 4d.; sulphide, red, 12s. 11d.

**Methylated Spirit.**—Industrial 66° O.P. 100 gals., 2s. 0½d. per gal.; pyridinised 64° O.P. 100 gals., 2s. 5d. per gal.

**Nitric Acid.**—£22 to £30 per ton ex works.

**Oxalic Acid.**—From £60 per ton for ton lots, carriage paid, in 5-cwt. casks; smaller parcels would be dearer; deliveries slow.

**Paraffin Wax.**—Nominal.

**Potash, Caustic.**—Basic price for 50-100 ton lots. Solid, 88/92%; commercial grade, £53 15s. per ton, c.i.f. U.K. port, duty paid. Broken, £5 extra; flake, £7 10s. extra; powder, £10 extra per ton. Ex store, £3 10s. supplement.

**Potassium Bichromate.**—Crystals and granular 7d. per lb.; ground 7d. per lb., carriage paid. **MANCHESTER** and **GLASGOW:** 7d. per lb. in orig. casks.

**Potassium Carbonate.**—Basic prices for 50 to 100 ton lots; hydrated, 83/85%, £46 17s. 6d. per ton; calcined, 98/100%, £52 10s. per ton, c.i.f. U.K. port. Ex warehouse, £3 10s. extra per ton.

**Potassium Chlorate.**—Imported powder and crystals, ex store London, 10d. to 1s. per lb.

**Potassium Iodide.**—B.P., 8s. 8d. to 12s. per lb., according to quantity.

**Potassium Nitrate.**—Small granular crystals, £26 to £30 per ton ex store, according to quantity.

**Potassium Permanganate.**—B.P., 1s. 5½d. per lb. for 1 cwt. lots; commercial, £7 9s. 6d. to £8 1s. 6d. per cwt., according to quantity d/d.

**Potassium Prussiate.**—Yellow, about 1s. 3d. to 1s. 5d. per lb., supplies scarce.

**Sal ammoniac.**—First lump, spot, £48 per ton; dog-tooth crystals, £50 per ton; medium, £48 10s. per ton; fine white crystals, £19 10s. per ton, in casks, ex store.

**Soda, Caustic.**—Solid, 76/77% spot, £11 17s. 6d. per ton d/d station.

**Soda Crystals.**—Spot, £5 to £5 5s. per ton d/d station or ex depot in 2-cwt. bags.

**Sodium Acetate.**—£37 to £40 per ton, ex wharf.

**Sodium Bicarbonate (refined).**—Spot, £11 per ton, in bags.

**Sodium Bichromate.**—Crystals, cake and powder, 5½d. per lb., anhydrous, 6d. per lb. net d/d U.K. MANCHESTER and GLASGOW: 5½d. per lb., in orig. casks.

**Sodium Bisulphite Powder.**—60/62%, £17 10s. per ton d/d in 2-ton lots for home trade.

**Sodium Carbonate Monohydrate.**—£20 per ton d/d in minimum ton lots in 2 cwt. free bags.

**Sodium Chlorate.**—£36 to £45 per ton, d/d, according to quantity.

**Sodium Hyposulphite.**—Pea crystals, £19 15s. per ton for 2-ton lots; commercial, £14 10s. per ton. MANCHESTER: Commercial, £14 10s.; photographic, £19 15s.

**Sodium Iodide.**—B.P., for not less than 28 lb., 9s. 6d. per lb.; for not less than 7 lb., 13s. 1d. per lb.

**Sodium Metasilicate.**—£14 5s. per ton, d/d U.K. in cwt. bags.

**Sodium Nitrate.**—Refined, £13 10s. per ton for 2-ton lots d/d

**Sodium Nitrite.**—£22 to £23 per ton for ton lots.

**Sodium Perborate.**—10%, £5 2s. per cwt.

**Sodium Phosphate.**—Di-sodium, £19 to £22 per ton d/d for ton lots. Tri-sodium, £25 to £27 per ton d/d for ton lots.

**Sodium Prussiate.**—From 7½d. per lb. ex store.

**Sodium Silicate.**—£9 15s. per ton, for 4-ton lots.

**Sodium Sulphate (Glauber Salts).**—£4 10s. per ton d/d.

**Sodium Sulphate (Salt Cake).**—Unground. Spot £4 18s. 6d. per ton d/d station in bulk. MANCHESTER: about £4 7s. 6d. ex works.

**Sodium Sulphide.**—Solid 60/62%, Spot, £17 5s. per ton d/d in drums; crystals, 30/32%, £12 12s. per ton d/d in casks.

**Sodium Sulphite.**—Anhydrous, £29 10s. per ton; Pea crystals, spot, £18 10s. per ton d/d station in kegs; commercial, £12 15s. per ton d/d station in bags.

**Sulphur.**—Finely powdered, £18 10s. per ton d/d; precip. B.P., 68s. per cwt.

**Sulphuric Acid.**—168° Tw., £6 10s. to £7 10s. per ton; 140° Tw., arsenic-free, £4 11s. per ton; 140° Tw. arsenious, £4 3s. 6d. per ton; quotations naked at sellers' works.

**Tartaric Acid.**—2s. 6½d. per lb., less 5%, carriage paid for lots of 5 cwt. and upwards. MANCHESTER: 2s. 6½d. per lb.

**Zinc Oxide.**—Maximum prices: White seal, £30 17s. 6d. per ton; red seal, £28 7s. 6d. d/d; green seal, £29 17s. 6d. d/d buyers' premises.

**Zinc Sulphate.**—Tech., about £25, carriage paid, casks free.

### Rubber Chemicals

**Antimony Sulphide.**—Golden, 10d. to 1s. 6d. per lb. Crimson, 1s 8½d. to 2s. per lb.

**Arsenic Sulphide.**—Yellow, 1s. 9d. per lb.

**Barytes.**—Best white bleached, £7 3s. 6d. per ton.

**Cadmium Sulphide.**—5s. 6d. to 6s. 6d. per lb.

**Carbon Black.**—5d. to 7½ per lb., according to packing.

**Carbon Bisulphide.**—£33 5s. to £38 5s. per ton, according to quantity, in free returnable drums.

**Carbon Tetrachloride.**—£46 to £49 per ton.

**Chromium Oxide.**—Green, 1s. 6d. per lb.

**India-rubber Substitutes.**—White, 5½d. to 8½d. per lb.; dark, 5½d. to 6d. per lb.

**Lithopone.**—30%, £25 per ton; 60%, £31 to £32 per ton. Imported material would be dearer.

**Mineral Black.**—£10 to £14 per ton.

**Mineral Rubber, "Rupron."**—£20 per ton.

**Sulphur Chloride.**—7d. per lb.

**Vegetable Lamp Black.**—£44 per ton.

**Vermilion.**—Pale or deep, 14s. 6d. per lb., for 7 lb. lots and less. Plus 5% War Charge.

### Nitrogen Fertilisers

**Ammonium Phosphate Fertilisers.**—Type A, £21 8s.; B, £15 5s. 6d.; C, £18 17s. per ton in 6-ton lots, d/d farmer's nearest station up to June 30, 1941.

**Ammonium Sulphate.**—Per ton in 6-ton lots, d/d farmer's nearest station: March/June, £10 2s.

**Calcium Cyanamide.**—Nominal: supplies very scanty.

**Concentrated Complete Fertilisers.**—£15 10s. to £16 3s. 6d. per ton in 6-ton lots, d/d farmer's nearest station up to June 30, 1941. Supplies small except C.C.F. Special at £15 14s. per ton.

**"Nitro-Chalk."**—£9 14s. per ton in 6-ton lots, d/d farmer's nearest station up to June 30, 1941.

**Sodium Nitrate.**—Chilean, £13 10s. per ton in 2-ton lots, f.o.r. Liverpool, March delivery; agricultural, £10 14s. per ton in 2-cwt. bags, d/d farmer's nearest station up to June 30, 1941.

### Coal Tar Products

**Benzol.**—Industrial (containing less than 2% of toluol), 2s. to 2s. 2d. per gal., ex works.

**Carbolic Acid.**—Crystals, 9½d. to 10½d. per lb.; crude, 60's 3s. 6d. to 3s. 9½d., according to specification. MANCHESTER: Crystals, 10½d. per lb., d/d; crude, 3s. 7d. to 3s. 10d. naked at works.

**Creosote.**—Home trade, 5d. to 5½d. per gal., f.o.r.; maker's works; exports 6d. to 6½d. per gal., according to grade. MANCHESTER: 5½d. to 7½ per gal.

**Cresylic Acid.**—Pale, 99/100%, 2s. 5d. to 2s. 6d. per gal. MANCHESTER: Pale, 99/100%, 2s. 7d. per gal.

**Naphtha.**—Solvent, 90/160°, 2s. 3d. to 2s. 6d. per gal.; Heavy 90/190°, 1s. 7d. to 1s. 8d. naked at works. MANCHESTER: 90/160°, 2s. 3d. to 2s. 6d.

**Naphthalene.**—Crude, whizzed or hot pressed, £14 per ton; purified crystals, £27 per ton in 2-cwt. bags; flaked, £27 per ton. Fire-lighter quality, £6 10s. to £7 10s. per ton ex works. MANCHESTER: Refined, £26 10s. per ton.

**Pitch.**—Medium, soft, nominal. MANCHESTER: Nominal.

**Pyridine.**—90/140°, 17s. per gal.; 90/160°, 13s. 6d.; 90/180°, 4s. to 5s. per gal., f.o.b. MANCHESTER: 13s. 6d. to 17s. per gal.

**Toluol.**—Pure, 2s. 5d., nominal. MANCHESTER: Pure, 2s. 5d. per gal., naked.

**Xylo.**—Commercial, 3s. 4d. to 3s. 5d. per gal.; pure, 3s. 6d. MANCHESTER: 3s. 3d. to 3s. 8d. per gal.

### Wood Distillation Products

**Calcium Acetate.**—Brown, £21 per ton; grey, £24. MANCHESTER: Grey, £23.

**Methyl Acetone.**—40.50%, £45 to £46 per ton.

**Wood Creosote.**—Unrefined, 2s. per gal., according to boiling range.

**Wood Naphtha, Miscible.**—4s. 6d. to 5s. per gal.; solvent, 5s. per gal.

**Wood Tar.**—£4 to £6 per ton, according to quality.

### Intermediates and Dyes (Prices Nominal)

**m-Cresol** 98/100%.—Nominal.

**o-Cresol** 30/31° C.—Nominal.

**p-Cresol** 34/35° C.—Nominal.

**Dichloraniline.**—2s. 8½d. per lb.

**Dinitrobenzene.**—8½d. per lb.

**Dinitrotoluene.**—48/50° C., 9½d. per lb.; 66/68° C., 1s.

**p-Nitraniline.**—2s. 5d. per lb.

**Nitrobenzene.**—Spot, 5½d. per lb., in 90-gal. drums, drums extra, 1-ton lots d/d buyer's works.

**Nitronaphthalene.**—1s. 2d. per lb.; P.G., 1s. 0½d. per lb.

**o-Toluidine.**—1s. per lb., in 8/10 cwt. drums, drums extra.

**p-Toluidine.**—2s. 2d. per lb., in casks.

**m-Xylyl Acetate.**—4s. 5d. per lb., 100%.

### Latest Oil Prices

LONDON. April 10.—For the period ending May 3, per ton, net, naked, ex mill, works or refinery, and subject to additional charges according to package and location of supplies:

LINSEED OIL, raw, £11 10s. RAPESEED OIL, crude, £44 5s. COTTON-SEED OIL, crude, £31 2s. 6d.; washed, £34 5s.; refined edible, £35 12s. 6d.; refined deodorised, £36 10s. SOYA BEAN OIL, crude, £33; refined deodorised, £37. COCONUT OIL, crude, £28 2s. 6d.; refined deodorised, £31 7s. 6d. PALM KERNEL OIL, crude, £27 10s.; refined deodorised, £30 15s. PALM OIL, refined deodorised, £37; refined hardened deodorised, £41. GROUNDNUT OIL, crude, £35 10s.; refined deodorised, £40. WHALE OIL, crude hardened, 42 deg., £30 10s.; refined hardened, 42 deg., £33. ACID OILS.—Groundnut, £19; soya, £17; coconut and palm kernel, £22 10s. ROSIN, 25s. to 30s. per cwt., ex wharf, according to grade. TURPENTINE, 68s. 6d. per cwt. spot. American, including tax, ex wharf, in barrels, and ex discount.

LIVERPOOL.—April 9.—TURPENTINE, spot, American, 68s. 6d. per cwt.

## Commercial Intelligence

The following are taken from printed reports, but we cannot be responsible for errors that may occur.

### Mortgages and Charges

(Note.—The Companies Consolidation Act of 1908 provides that every Mortgage or Charge, as described therein, shall be registered within 21 days after its creation; otherwise it shall be void against the liquidator and any creditor. The Act also provides that every company shall, in making its Annual Summary, specify the total amount of debt due from the company in respect of all Mortgages or Charges. The following Mortgages and Charges have been so registered. In each case the total debt, as specified in the last available Annual Summary, is also given—marked with an \*—followed by the date of the Summary, but such total may have been reduced.)

H. J. ELLIOTT LTD., London E.C., scientific instrument manufacturers. (M., 12/4/41). March 15, by order on terms, £11,000 debenture, to H.M. Treasury Solicitor; general charge. \*Nil. June 7, 1939.

### Companies Winding-Up Voluntarily

ANESTAN PRODUCTS, LTD. (C.W.U.V., 12/4/41). By special resolution, March 25. Arthur Robert Oldcorn Slater, of 6 Broad Street Place, London, appointed liquidator.

### Receivers Ceasing to Act

BAKER'S PURE DRUG CO., LTD., London, S.W. (R.C.A., 12/4/41). C. L. H. Martin. February 14.

## Company News

**Snia Viscosa**, rayon manufacturers, announce a first and final dividend of 9.6 per cent. gross (10 per cent. gross).

**The British Oxygen Co., Ltd.**, announce an increased profit for 1940, totalling £1,897,508, a rise of £509,513 on the previous figure of £1,387,995.

**United Glass Bottle Manufacturers, Ltd.**, with a final dividend of 6 per cent., and a bonus of 2½ per cent., have maintained, for the fourth year in succession, a distribution of 12 per cent. on the ordinary capital. Profits after deduction of tax are £236,345, against £248,443, according to the preliminary statement.

**Associated Portland Cement Manufacturers, Ltd.**, report a trading profit of £749,669 (£879,282), and revenue from investments is £72,751 lower at £450,354. An ordinary dividend of 10 per cent. has been paid, compared with 15 per cent., and £215,328 goes forward, as against £213,180. **British Portland Cement's** trading profit declined by £81,236 to £688,134, and the ordinary dividend is 17½ per cent. (20 per cent.). **Alpha Cement** show a trading profit of £305,151 (£314,757), but the ordinary dividend is maintained at 8½ per cent.

## New Companies Registered

**L. G. Walton, Ltd.** (366,082). Private company. Capital £1000 in 1000 shares of £1 each. Chemical manufacturers, dye makers, dyers, bleachers, tar and ammonia distillers, manufacturers of tarred road-making materials, etc. Directors: Saml. T. Clarke; Leonard G. Walton. Registered Office: 132 Highgate, Kendal, Westmorland.

**Thames Technical Co., Ltd.** (366,022).—Private company. Capital £1000 in 1000 shares of £1 each. Manufacturers of and dealers in electrical, chemical and other goods, etc. Subscribers: Stella Jacobs; Stanley C. Goldsmith; Ethel M. Finlayson is the first director. Solicitors: Clifford W. Emptage, 6 Holborn Viaduct, E.C.1. Registered Office: 25/7 Oxford Street, W.1.

**Geetabs, Ltd.** (366,094). Private company. Capital £100 in 100 shares of £1 each. Manufacturers of and dealers in chemicals, disinfectants, dyes, medicines, fertilisers, plastic oils, etc. Directors: Geo. T. Smith and Robert Steel. Solicitors: Godfrey Teesdale and Co., 4 Raymond Buildings, W.C.1. Registered Office: 40 Wellclose Square, E.1.

**S & D** (established 1783) **Chemical Manufacturing Co., Ltd.** (365,951). Private company. Capital £100 in 100 shares of £1 each. Manufacturers of and dealers in chemicals, drugs, disinfectants, polishes, fertilisers, colours, glues, toilet requisites, etc. Subscribers: Lionel Altman, Vita Altman. Lionel Altman is the first director. Solicitor: L. Altman, 4 Park Square, Leeds, 1. Registered Office: Driffield Place, Leeds.

**Anestan, Ltd.** (366,250). Private company. Capital £100 in 1000 shares of 2s. each. To acquire the business of Anestan Products, Ltd. (in liquidation), including the trade marks "Anestan" and "Ephazone," and to carry on the business of manufacturers of and dealers in medical preparations, etc. Directors: H. B. Stevens, O.B.E.; J. E. Ogle; and W. S. Cooper. Solicitors: P. H. Brashier & Co., 9-11 Copthall Avenue, E.C.2. Registered office: 59 Brook Street, W.1.

## Chemical and Allied Stocks and Shares

DESPITE the war developments, no heavy selling was reported in the stock and share markets, and the general undertone appeared to be fairly steady, although the volume of business remained on a small scale. Removal of uncertainties regarding the Budget tended to assist market sentiment, and the Chancellor's proposals were regarded as no more severe than could have been expected in existing conditions; but the modifications in respect of E.P.T. were not in line with the hopes recently current in the City. Despite the increase in income tax, British Funds remained in request, and the fact that on balance these were only moderately lower assisted sentiment generally.

Imperial Chemical at 29s. 9d. were slightly lower as compared with a week ago, while the 7 per cent. preference shares improved from 32s. 9d. to 33s. 1½d. Borax Consolidated held their recent rise to 29s., and the preferred and preference units were bought in view of the apparently attractive yields. Lever & Unilever were easier at the rather lower price of 22s. 3d., but the company's various classes of preference shares were quite well maintained, while on further consideration of the recently-issued results, British Oil & Cake Mills preferred ordinary shares further improved from 37s. 6d. to 38s. Turner & Newall remained around the rather lower price of 68s. 9d., made last week. Moreover, at the time of writing Dunlop Rubber ordinary units have a steady appearance around 34s., while Cerebos were slightly higher at 48s on hopes that the results, due next month, may show the maintenance of the dividend at 40 per cent. Nairn & Greenwich at 53s. 1½d. were slightly better on balance, and Barry & Staines made the higher price of 26s. 9d.; financial results of the last-named company are due shortly. British Oxygen remained under the influence of satisfaction with the past year's figures, and were again around 63s. 9d.

Babcock & Wilcox had a firmer appearance at 39s. 9d. (the financial results are due next month) and shares of iron and steel companies were relatively steady, the assumption being that in most cases dividends are likely to be little changed, and on this basis yields at current prices would be quite attractive. Stewarts & Lloyds were steady at 43s. 7½d., and United Steel 21s. 9d., but Staveley shares had an easier appearance at 45s. 6d. Tube Investments were around 90s. 3d. In other directions, the units of the Distillers Co. had a firmer appearance following the Budget, but United Molasses were easier at 23s. 7½d. B. Laporte remained firm at 60s. on continued expectations in the market that the results due next month will show a dividend at 15 per cent. for the past year. Business at 7s. was shown in Lawes Chemical, and Monsanto Chemicals preference transferred around 21s. 9d. Among smaller-priced shares, Greer-Chemical Holdings were 5s. 7½d.; while William Blythe 3s. shares were around 5s., and Sanitas Trust 12s. 9d. Associated Cement had an easier appearance at 53s. 9d., but Rugby Cement shares were firmer under the influence of the statements at the recent meeting, and, at 13s. 4½d., British Plaster Board 5s. shares were well maintained. Goodlass Wall 10s. shares transferred up to 10s. 7½d., and International Paint held their recent improvement to 82s. 6d. Pinchin Johnson at 18s. were slightly better on balance.

Boots Drug were easier at 35s. 4½d., although the prevailing view is that the financial results, which fall to be issued next month, are likely to show the maintenance of the distribution. Results of Timothy White's and British Drug Houses are also due in a few weeks, and the shares are around 18s. 6d. and 23s. 1½d. respectively, at the time of writing. Beecham's Pills 2s. 6d. deferred shares have been firmer at 8s. on the Chancellor's decision to repeal the medicine stamp duty. After an earlier reaction, "Shell" and other leading oil shares showed a tendency to rally, awaiting the interim dividend decision of Trinidad Leaseholds.

BRITISH PLASTICS YEAR BOOK, 1941. London: Plastics Press, Ltd., pp. 468. 15s.

As in the last year, restrictions on paper have limited the extent of the new edition, but even so this Year Book will continue to prove invaluable to the plastics industry. Information concerning plant, proprietary names, materials, associations—in short, all that has been of use before—again appears within the pages of the volume. The publishers have maintained the various sections, including the editorial, in which there are reviews covering the past two years of cellulose acetate, ethenoid resin, and phenolic resin patents. A review of urea resins had to be omitted through enemy action. The articles, however, reveal that some interesting developments have taken place, due in no small extent to the stimulus of the war effort. Among the useful features included are the regular addresses of firms, as well as their temporary ones, wherever this has been found possible.

## CORROSION-RESISTING PAINTS

Ten years' research on chlorinated rubber has resulted in the production of a paint which is unaffected by acids, alkalies, sea-water, and the majority of chemical solutions. That, in effect, is the substance of the booklets issued by DETEL PRODUCTS, LTD., Long Drive, Greenford, Middlesex, describing the uses and application of Detel coatings and D.M.U. (Detel Metal Undercoat).

Detel is a special form of chlorinated rubber dissolved in a mixture of high-flash aromatic hydrocarbons. It combines flexibility, adhesion, and extreme corrosion-resisting properties, as well as being able to withstand a dry heat temperature of 200° F. or a wet heat of 100° F., the latter figure applying to pure water. D.M.U. is claimed to be the most efficient anti-corrosive primer for iron or steel that has ever been produced. Though a form of chlorinated rubber is used as a binding material, the protective properties depend on the 92 per cent. of finely divided zinc which enters into its composition. This high zinc content makes a coat of D.M.U. resemble that obtained by galvanising or sherardising, but there are several important differences. From its composition the paint is best applied direct to the metal. Nor does the high zinc content bar D.M.U. from becoming an effective primer for further acid-resisting coats. The metal parts of a descaling plant using hot sulphuric acid are quoted as an example; they have resisted immersion, acid splashing, and steam for over two years after being coated with D.M.U., followed by Detel Red "A".

The qualities of Detel for withstanding sea-water have been recognised by the appearance of details in *Lloyd's List* following experiments in all waters. One result has been consistently obtained—the absence of corrosion. D.M.U. (H), or Export D.M.U., is in all respects similar to D.M.U. except that it has an increased temperature resistance.

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